

A SHORT
MANUAL OF ORTHOPÆDY

THE HEAD AND NECK

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HEATHER BIGG

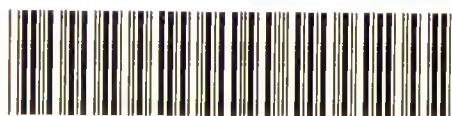
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A SHORT

MANUAL OF ORTHOPÆDY

A SHORT MANUAL OF ORTHOPÆDY

By HEATHER BIGG, F.R.C.S.ED.

DESCRIBING THE DEFORMITIES AND DEFICIENCIES OF THE HUMAN BODY

In Half-yearly Parts

PART I.—OF THE HEAD AND NECK.	<i>Now ready</i>
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A SHORT
MANUAL OF ORTHOPÆDY

BY
HEATHER BIGG, F.R.C.S. ED.

PART I
THE DEFORMITIES AND DEFICIENCIES OF
THE HEAD AND NECK



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INTRODUCTION

I HAVE entitled this work ‘A Short Manual of Orthopædy,’ and I propose to embody in its pages only the outline of a larger and more complete work, which I have been preparing for a number of years, and which I hope at some later date to put before the public.

Now, when Andry used the word Orthopædia he meant to signify by that term only what was conveyed by its Greek derivation, and he intended to limit its meaning to that particular field of science which he defined as the “art of correcting and preventing deformities in children.”

But the sense of the term in the century and a half which have elapsed since its first introduction has been gradually enlarging in comprehension, until nowadays it has come to completely embrace the treatment of all deformities generally, as well also as of those diseases which may produce deformity.

In this work I shall go a step further still, and take as the province of orthopædy the consideration of such structural deformities, debilities, and deficiencies of the body as are amenable to treatment, whether this treatment be medical, surgical, or me-

chanical, and whether this treatment be preventative, curative, or prothetic. Thus I shall not deal solely with such recognised deformities as spinal curvature or club-foot, for example, but shall also include such structural debilities as hernia, for example, and likewise such structural deficiencies as entail the prothetic substitution of an artificial for a natural part, as amputation of a limb, for example.

In dealing, even shortly, with so wide a subject, some sort of classified order has to be laid down, not only that every kind of ailment may be separately dealt with, but also that each particular ailment may hold its proper place for reference. Now it is to be noted that many well-known works on orthopædic subjects resolve themselves into a series of primary chapters on such important matters as club-foot, spinal curvature, or hip disease; and that these are followed or roughly connected by subordinate chapters on minor subjects. This method, from some points of view, may have its advantages, but it has also the grave objection of being unsystematic. To avoid this drawback, therefore, I propose to pursue the regional method that is adopted in most works on general surgery, and to take each separate ailment as it comes in following the regions of the body through in their regular order. At the same time, as there are certain broad general principles that are applicable not to one ailment alone but to many, I shall take such principles when they first arise, and go completely into them, so that

subsequent reference and not repetition may be alone needed.

I shall further confine myself in the observations and statements I may make to things that have come within my own personal knowledge and experience, using the records of my own note-books and case-books as the main source from which to draw facts and their corroborations. It is, of course, quite possible (and there are many instances in point) for an author to write on a subject in which he has never before interested himself, for he may read all the standard works on that subject, and from these compile a very excellent book; such a book, however, owes its value rather to the author's powers of comprehension and condensation than to any personal experience of the subject on which he writes. And further, if he has, as must frequently happen, to balance and decide on conflicting views amongst the authors from whom he has borrowed his materials, he is extremely likely to be misled, because he lacks the personal knowledge on which to base a correctly critical judgment. I shall endeavour in these pages simply to give facts as observed by myself; nor shall I enter on the dangerous grounds of explanatory theories, and for this reason, that while in ancient books on science (and Andry's original work on 'Orthopædy' is a case in point) observed facts always remain as immutable in one century as in another, the explanation of them often varies with the varying progress and theories of science.

Finally, as I aim now at only broadly outlining the extent and main principles of orthopædy, I shall omit many details which would be assuredly necessary to the completeness of a more exhaustive work. I shall omit all lengthy surgical and anatomical descriptions, since to the professional reader they are unnecessary as being already known, and to the lay reader they are scarcely requisite. I shall also omit the usual chapter of history with which works on orthopædy are frequently ornamented, because, although in itself most interesting, it has been already excellently done by previous writers, and is therefore easily accessible in medical libraries to those who may wish to be acquainted with it. Lastly, I am omitting illustrative wood-blocks, not only because they take up considerable space, but also because (and this is especially the case with orthopædic appliances) it is not so much the details as the principles that are of paramount importance, and these latter can be readily explained in the text.

HEATHER BIGG.

56, WIMPOLE STREET, LONDON, W.

ORTHOPÆDY

CHAPTER I

DEFORMITIES OF THE CRANIUM

OWING to the structural arrangement of the cranium, two great deformers of other parts of the body, namely, irregular muscular action and diseases of joints, cannot here produce the marked results that they elsewhere originate. For the bones of the cranium are immoveably mortised together by their sutures, whilst the muscles have little controlling use beyond their auxiliary entrance into facial expression.

Cranial deformity may be apparent in general exaggeration or in general diminution of the size of the skull; as, for example, in **hydrocephalus** or **microcephalus**. It is not unusual to find congenital misshape of some particular bones of the skull, and at the same time to observe no noticeable alterations in brain function: in such cases there is nothing to be done surgically.

Perhaps the most common cranial deformity is due to **sebaceous cysts**. Their existence is generally discovered when they are about the size of a

pea by the comb catching in the irregularity on the scalp surface. If left alone they increase in size, at first entirely concealed by the hair, then raising the hair into a palpable prominence, and finally appearing to protrude through the hair as the skin becomes stretched and the follicles widely separated so as to leave an obviously scanty covering. Frequently, from some cause or other, such as a blow or inadvertent scratching of the comb, the skin over the cyst becomes inflamed, and the cyst-wall participating in this inflammation gives way, the contents being either suppuratively discharged or squeezed out. The cyst may either re-form, or it may by the suppurative process be radically cured. The ordinary treatment is to remove such cysts by the knife while still freely moveable and not adherent to the underlying parts; and this is done either by complete dissection or by divisional transfixion, each half being then torn out with the forceps. The former is the more certain but the more tedious process. These cysts are rarely single, and may be so numerous that the scalp is covered with them in various stages of development.

Another rarer cause of cranial deformity is **exostosis**, due to hypertrophy of some spots on the external plates of the bones. Instances of the sort are common enough in museums, and are not uncommon in life, these exostoses being popularly known as "horns." Their treatment generally re-

solves itself into the correction of suspected constitutional faults and the use of local absorbents, or even escharotics; or, if desired, into their removal by operation, although the most approved opinions are towards leaving them uninterfered with by the latter method as long as they are not grossly deforming and do not injure the surrounding parts.

Of the other deformers of the surface of the cranium may be mentioned **hæmatoma**, which only incidentally requires surgical treatment; **meningocele** and **encephalocele**, which fall in the province of brain surgery proper, but may call for some form of mechanical protection; and tumours common to other parts of the body generally which may occur in this particular situation, and are dealt with according to their kind.

CHAPTER II

DEFICIENCIES OF THE CRANIUM

THE commonest deficiencies in the cranial bones are those caused by **late closure of the fontanelles**, or by **craniotabes**. In neither of these instances is it usually thought necessary to give any shielding protection to the underlying brain, the more so as by process of time these deficiencies usually tend to become remedied.

The rarer and more serious deficiencies are those of **traumatic** origin. I saw two such cases among the wounded soldiers in Netley Hospital after the Soudan campaign, both being the result of blows from the heavy double-handed swords used by the natives against our troops. In one case not only had a part of the skull been completely shorn off, but also a part of the cerebrum. Both men were at the time I saw them in perfect health, with the wounds excellently covered by sound skin, which rose and fell with the pulsations of the brain. They were supplied with leathern skull shields, to prevent the chance of injury to the brain by accidental blows or falls; and this provision seems to be a wise one wherever the cranial deficiency is permanent. The deficiencies caused by the operative removal of portions of the skull can of course be protected in a similar way.

CHAPTER III

DEFORMITIES OF THE FACE

THE face is like other parts of the frame in that it has a simple bony foundation, over which lies a coating of muscle and tissue. But here the similarity ends, for on the grim osseous shape, with which we are familiar as the very emblem of mortality, there is imposed a covering which, according to its arrangement, modelling, and contour, may arouse in us the highest feelings of admiration or the deepest feelings of repugnance. Further, the face is constantly exposed to view, and in it we read, whether rightly or wrongly, indications of the intelligence, disposition, character, and passion of its possessor. If the face is fair, we credit the person with similar attributes of mind; and if the face is deformed, it is impossible to dissociate its ugliness from a sense that then it covers a corresponding wickedness of mind. To pursue this further would be to become involved in the intricacies of physiognomical science, and this is away from the point; but this may be said, that all that deforms the face terribly discounts any person in his association with his fellows, and that a passable face is an important passport in the world.

Now, whether we like it or not, we are all students

of faces, and the world generally has formed in its mind a kind of commonplace standard of what facial form is passable. What excels this rouses a sense of admiration ; what comes short of it causes the reverse ; while whatever constitutes an absolute perversion from it (as actual deformity does) compels sensations of positive disgust. Hence it is readily understood that facial errors and deformities, although they may denote no real defect in a person's health, mind, or character, must appear of much greater importance than all the graver diseases and deformities of other parts of the body put together, and hence their importance to the orthopædic surgeon.

Now in viewing the deformities of the face it is advisable, for the sake of clearness, to consider separately (1) those deformities that may affect the general surface of the face, and (2) those which affect the special organs of sense, namely, the eye, ear, nose, and mouth.

The **skin** and surface of the face may be deformed by accidental injuries. Of these fortuitous causes some may only produce temporary results, as in the case of **contusions** ; but others, such as wounds or **burns**, may by their subsequent cicatrisation and by the consequent contraction of the tissues leave very marked deformity, which is the more noticeable when the angles of the mouth or the eyelids are affected, and become drawn and fixed from their place. The treatment of such cases resolves itself

into well-considered division of those contracted bands of tissue that are distorting the features, and even with the severest cases the most satisfactory results can be obtained.

For example, some years since a gentleman came to me who was a schoolmaster, and subject to epileptic fits. He had been seized with one of his attacks while standing near the fire, and had fallen unconscious with the left side of his head into the grate, where the burning coals destroyed every tissue that came in contact with them. The terrible wounds so caused had been carefully treated, and satisfactorily skinned over; but when I saw him he was without hair on the whole of the left half of his scalp, his left ear was gone, and the left side of his face was fearfully disfigured, the corner of the mouth being drawn towards the chin, and the lower eyelid being everted by the contracted tissues below. It was obviously impossible for him to resume the tutorship of boys while in such a ridiculous condition, and yet his livelihood depended on his school. Within a few months, however, he was enabled to return to his work without any noticeable deformity. In the first place, by a series of well-directed incisions the contracted tissue was divided, and stretched so as to bring the eye and the mouth back to their natural configuration. In the meantime the hair on the uninjured side of the face was allowed to grow so as to constitute a half moustache and beard. A very skilful wig, as well as a counter moustache and beard for

the injured side of the face, was designed and made by Mr Carles, of Bond Street, and an artificial ear was constructed to take the place of the missing member. When all these arrangements had been completed his face presented quite a natural appearance, and he was able to resume his work and livelihood.

The **bones** of the face (excluding the bridge of the nose, which will be presently considered) are rarely deformed even by very severe injuries—not, at all events, if immediately and correctly treated; and for these reasons: first, that they are generally easily replaced and held in position; and next, that being well supplied with blood they readily reunite and heal. During the Jubilee Review at Aldershot, while the men were waiting for the march past and had their rifles piled, there was a mounted officer in the regiment to which I was surgeon, whose horse took fright and threw him bodily off in such a way that he fell with his cheek-bone on the muzzles of a stack of piled rifles. The whole malar bone was detached by the force of the blow, and was freely moveable under the fingers, although the skin was comparatively speaking uninjured over the part. This severe accident was treated by simple dressings and plastering; and although at one time there were two sinuses through which a probe could pass from the cheek into the cavity of the nose, yet the whole healed up perfectly, with no other ill result or deformity than that in the contraction of the

healing tissues the lower eyelid was drawn down and everted. This minor consequence was remedied by the usual plastic operation, and the face restored to its natural condition, there being finally no difference whatever in the level or size of the cheek-bones.

The lower jaw is not unfrequently fractured, but its treatment presents no special difficulties, and it is rare that noticeable deformity results. If it does, it is not remediable—or rather, the necessary operation would only be justifiable for very grave deformity; and such a case has never fallen within my experience.

Nervo-muscular deformities of the face.—There are two kinds of deformity (namely, paralytic and spasmodic) that can arise, either from actual disorder of the subordinate nervo-muscular elements themselves, or from faulty relationship of these subordinate elements to the dominant control of the higher nervous centres, or from reflex disturbances originating in outlying parts of the body. But as it is my intention in a subsequent chapter, before dealing with nervo-muscular deformities of the limbs, to go fully into the mechanism and relationships of the nervo-muscular system, I shall abstain at this point from doing more than touch briefly on these matters in dealing with the face.

Facial paralysis, which is generally one-sided, shows itself when the face is passive by a smooth

and expressionless appearance of the forehead and cheek, and by a depressed aspect of the corner of the mouth. When activity is attempted the eyelids cannot be closed, and food accumulates uncontrollably between the cheek and the teeth in mastication. The direct cause is that the facial muscles have been in some way or another deprived of the balancing control and influence of the facial nerve. The treatment consists in making a correct judgment of the precise locality of the existing interference with the nervo-muscular function, and in rightly divining the nature of this interference, which should then, if possible, be removed by suitable remedies. In the meantime the facial muscles are to be kept in nutritive activity, and are to be preserved from degeneration by electricity and massage.

Facial spasm is more often clonic than tonic; that is to say, it is more often intermittent than persistent, and in either event it ceases with sleep. It may affect some or all the muscles of one or both sides of the face. In its mildest and most ephemeral form it has probably been experienced by everyone at some time or other in the twitching of the eyelids popularly known as "live blood;" in its exaggerated form it is seen as a constant working of all the muscles of the face; while in a less marked degree it is observable as a "nervous tic," involving only one or two of the muscles. I have noticed as a curious fact that many of our best

known comic actors have a “nervous tic” of this kind, and this is probably due to an habitual over-use of certain of the facial muscles. Its causes may be either reflex, as from digestive disturbances, or due to explosive escapes of energy from the higher nervous centres, as in epileptics, or nuclear through irritation of the proper centre of the nerve, or itinerant through irritation of the nerve-way itself; and to these causes may possibly be added habitude, as in the histrionic instances I have referred to.

Treatment consists, as in the previous affection, in correctly detecting and in removing, if possible, the cause; and where this latter is obscure, in relying on general bodily tonics and local nervous sedatives or counter-irritants. As the nutrition of the affected muscles is not as a rule impaired, electricity is of no particular service, but light massage and manipulation are of value—the former on account of its quieting influence, and the latter when directed towards stretching the contracted fibres. In cases of “nervous tic” dependent on habitude, the assistance of the will through regulated facial gymnastics will frequently effect a cure and “break the bad habit.”

Locked-jaw.—This term in the popular mind is commonly associated only with those peculiar tetanic contractions of the muscles of mastication that are dependent on irritative disease or injury—as, for example, the tearing of the muscles of the thumb

by a rusty nail. Such locking of the jaw is, however, symptomatic, and comes within the province of the physician. But there are other causes of locked-jaw, that fall into the sphere of the orthopædist. For example, contraction of the tissues of the inside of the cheek after ulcerative stomatitis may produce bands so strong as to fixedly close the jaw; disease of the temporo-maxillary articulation, with consequent fibrous or osseous ankylosis, may cause a like result; and there are certain congenital perversions of the mechanism of the temporo-maxillary joint that may make the jaw almost a fixity from birth, or at the best allow only a very slight scope of motion.

Now it is to be observed that the locking of the jaw in these latter cases may be due either to fibrous confinement or to bony locking. If it is the former, mechanical extension of the tissues may be practicable; if it is the latter, operation alone will give a satisfactory result.

The method of mechanical extension is pursued by adapting a pair of hinged plates to the teeth of the upper and lower jaws, and by gradually separating these plates by appropriately applied screw or elastic force. The best operative method is that known as Esmarch's, which consists in removing a triangular piece of bone from the ramus of the jaw, and in obtaining a fibrous union between the parts, the mobility of which is secured by alternative positions of opertness and closure during the healing process. I have seen this operation performed

with very excellent results at University College Hospital.

As regards a decision between these two methods of treatment, it would seem that where the lock is osseous, or due to old-standing fibrous barriers, it is best to adopt the operative plan forthwith; but that where there is only recent fibrous constriction the mechanical method may advisably be tried first, with the operation in reserve as an ultimate alternative.

I have myself had cases of locking of the jaw that have yielded to the mechanical method, and this notwithstanding that the pressure has had sometimes to be made on the bare gums in the absence of teeth.

Deformities of the eyelids come perhaps, in these days of universal specialism, rather under the treatment of the oculist than of the orthopædist, but I record them for the sake of completeness. I have already alluded to the eversion and distortion of the eyelids by cicatricial contractions, as well as to the results of affections of the facial nerve. There remains to be considered another nervo-muscular affection of the lids.

Ptosis, or involuntary dropping of the upper lid, may be due to traumatic division of the elevating muscle itself, or, as is more commonly the case, may be the result of an affection of the (third) nerve that is assigned to it. If the former is the cause, the divided parts may happily be united by opera-

tion; if the latter is the cause, the same treatment will be required as in other cases of nervous inability—that is to say, the cause must be correctly diagnosed, and if possible removed.

The more intimate perversions of the eyeball itself do not call for attention here, as they are beyond the border line of orthopædy, and come within the recognised ground of the ophthalmic surgeon.

Deformities of the Ear.—The ears do not enter into the combinations of facial expression, and consequently are less noticed casually than the other organs of sense. Their commonest perversion is that, instead of lying closely and evenly by the side of the head, they project everted at an angle to the temporal bone, which angle may amount to a right angle, or even more. Now the shell of the ear has a cartilaginous frame, and it is best to state here that of all the tissues of the body, healthy and adult cartilage is the least susceptible to changes of form under pressure; on the other hand, it is very susceptible to pressure changes when it is inflamed or when its substance is quite infantile.

Eversion of the Ears.—From what has just been said it is obvious that too much attention cannot possibly be paid to the ears of newly born children. If there is any tendency to eversion, the probability is that whenever the child is lying asleep on its pillow the ear will be folded forwards into an exag-

geration of its faulty position, and that within a few weeks this deformity may become a fixed one. On the other hand, in these early days of infantile life it is easily possible, either by permanent strips of plaster, or by the constant use of a net night-cap in which is embodied a band that passes over the ears and confines them to the side of the head, to keep the ears in their proper position, and to avoid thereby ensuing deformity ; and every nurse should be cognizant of this fact.

With respect to the shape or make of such a night-cap a word or two may be said. It can be made either of open hand-made network or of coarse manufactured net. The band that has to include the ears should be an inch and a half wide, should pass over the top of the head, and its extremities should tie under the chin ; but the whole cap should be so fitted that it holds the ears without any tension being exerted by the tied knot of the band—in fact, the tie is only intended to keep the cap on, and not to be the cause of pressure. Any nurse with a little experiment can easily make such a cap, and if rightly fitted it will hold the ears without the band being tied at all ; on the other hand, if the tie of the band is relied on to cause the necessary pressure it will be most uncomfortable, if it does not half throttle the child. I insist on this point, as I have so often seen the caps improperly made.

If such a cap is applied in the earliest days of a child's life, or if plaster strips are used instead, the ears in a very short time will be found to take

their proper position ; but it must be remembered that the chance of attaining this result depends on its being done with the child from the moment of its birth.

If this opportunity is allowed to slip even for a few weeks, the ears can only be restored to position by a much longer procedure. This consists in wearing the night-cap above described while the child is still in arms. When, however, the child begins to walk about, parents as a rule object to anything so obvious as the cap during the day, and a special spring clip has been devised which is not so apparent ; on the other hand, the night-cap should still be worn at night.

The original ear-clip was invented by my father, and has been complimentarily copied by others. It consisted of flat watch-spring, and was made in two halves, which were joined by a slide so as to get accuracy of adjustment. The spring passed over the occiput, and in girls was concealed beneath the hair. Each aural end of the spring terminated in a small plate, which fitted over and held the concha of the ear. I have since improved this appliance by having it entirely made of tempered piano wire, which gives all the necessary power and is much less observable.

But, as I have just said, the length of time necessary to produce a good result by these plans (after the prime occasion has been let slip) is considerable, and it has occurred to me that something might be done in the way of operation. With this

view snipping away a portion of the under skin of the ear transversely to the middle of the concha has been tried, and a corresponding portion on the bald underlying part of the cranial skin, and then these two rawed surfaces were apposed and kept together till they had united. The drawbacks to this plan are that the ear when released pulls still on its artificial tether, and that two pouches are formed above and below the line of union which become the receptacles of dust and dirt, as well as of the secretions of the skin, and cannot be thoroughly cleaned out, and that consequently great irritation may ensue.

Another plan that has occurred to me (which is similar to one tried with the cartilages of the nose) is to thoroughly and artificially inflame the cartilages of the ears, and while they were in this condition to plaster them to the side of the head, on the principle that inflamed cartilages will readily submit to dictation of shape while in an engorged condition. I have never yet, however, tried this plan with the ears, although I have with the nose.

Hæmatoma is another cause of aural deformity. It is due to an effusion of sanguineous fluid between the cartilage of the ear and its perichondrium, and it makes its appearance as a tense hot liquid tumour, which, although small at the outset, may speedily enlarge so as to involve the whole external ear. And it is not only while the tumour is actually present that there is deformity, but as there is in-

variably more or less inflammation, so on its subsidence results are often left in permanent puckering, thickening, and distortion of the auricle after all the original tumour has long disappeared.

Hæmatoma is either traumatic or idiopathic. The former kind seems rare, and possibly it is favoured by some personal predisposition. I saw some time since a very marked instance of this traumatic type in the case of a healthy boy who was at Rugby, and who ascribed his injury to the fact that he had played with his head down in the heavy scrimmages of a violent match at football. The ear had within a few days become one huge swelling, but also within a few days this entirely subsided under simple cooling lotions, and no subsequent deformity ensued. As other boys at the school played football in a similar way, but as no other record of a similar result was obtainable, it would seem that idiosyncrasy had something to do with this case.

Idiopathic hæmatoma is apparently confined to patients under certain disorders of the brain, of maniacal, paralytic, and other kinds.

Treatment consists in the application of cooling lotions and cold compresses lightly applied, and this generally suffices even in the worst cases. Pressure is unserviceable. Surgical treatment also should be deferred to its final limit, for if aspiration is done the cavity very rapidly refills; and if incision is made, suppuration infallibly ensues, and the consequent puckering of the auricle may be very great,

for which nothing material can be done in the way of treatment.

I have observed that dogs, especially those with pendent ears, are subject to a similar condition, which readily yields to simple treatment, but is liable to recurrence.

Gouty and rheumatic nodules on the edge of the auricle are a cause of minor deformity. These nodules appear as small red painful swellings about the size of a pea, presumably when the system is in an acid condition, and disappear either spontaneously or under simple treatment. Each nodule, however, leaves an irregularity in the margin of the auricle, and when they are constantly recurring this margin itself becomes indented and corrugated. This slight deformity possibly is not noticeable to an ordinary observer, but is readily recognised by those who are in the habit of constantly looking at ears. Local treatment in such cases is the immediate application of either lead lotion or an ointment of the glycerine of subacetate of lead, in the proportion of half a drachm to one ounce of vaseline.

Deformities of the Nose.—The nose, like the ear, may be taken as practically immobile, but, unlike the ear, it lies in the very centre of expression, and in the very line of observation of the face. Above it are the eyes, the eloquent windows of the mind, and below it is the mouth, whose every line and change is indicative of a corresponding change in

the mood and mind of its owner. But the eyes may be veiled by dropping of their lids, and the tell-tale angles of the mouth may be concealed in a man by the moustache. The nose alone cannot be hid, hence of all features it is the one that is most permanently observed; and being thus a constantly visible component of expression, and being also only slightly mobile, it is obvious that it is its fixed form, and its form alone, which gives it such importance among the features of the face, and which is regarded, rightly or wrongly, as a guide in the face-read estimate of character. Consequently deformities of the nose are of paramount importance to the surgeon.

Now in considering nasal deformity it will be convenient to take the organ in its different parts; first the bony bridge, next the lateral cartilaginous constituents of the tip and nostrils, and finally the septum.

Deformities of the Bridge.—This part of the nose has an osseous frame, being given its form by the nasal bones. It may be congenitally malformed, or may develop flattened and misshapen, as is seen in subjects of hereditary syphilis; but the most common origin of deformity is accidental fracture, a thing not to be wondered at considering its exposed position and its comparatively frail structure. Fighting is a frequent cause of the “bridge of the nose being broken.” I believe Thackeray suffered in this way while up at the university in his younger

days, and the professional bruiser frequently carries a nose that has been obviously affected by the practice of his calling.

Now in whatever way the bony part of the nose has been misplaced, mechanical treatment by "nose machines" has little or no effect, and the only plan open to the surgeon is to re-detach the bones, and replace them by operation of some kind. The most obvious method of doing this would seem to be to pass one blade of a properly made pair of forceps into the nostril so as to grasp the internal surface of the bone while the other blade grasped the external surface, and to wrench the bone freely into its place by these means; and if the bones in the original fracture have been broken bodily away from their sutures this method might suffice, but as often as not the lower thinner part of the bone has been broken away, while the upper stronger part has held its place. In such instances, then, there arises need for a more directed method of operation. This can be performed by reflecting the covering skin and tissues, and attacking the bone by a circular dental saw in the precise line required. But there is another method (suggested originally, I think, by that eminent specialist Lennox Browne), which seems simpler, and which rests somewhat on the same procedure as that employed by a glazier in cutting glass—that is to say, the substance of the glass is first weakened by a cut with the diamond, and then easily snaps in the line required. In applying this principle to the nasal bones a small incision is

made down to the bone in the line required, and then with a fine dental drill a series of small contiguous holes are made through the substance of the bone, which being thereby weakened at the desired place is readily broken off by the forceps. To prevent injury to other parts in the cavity of the nose the thickness of the nasal bone can be first gauged with graduated callipers, and a stop placed on the drill, so that it may penetrate only to the required depth.

In whatever way the bone is detached from its faulty position, it is kept in its new place by being splinted by the introduction of a proper plug within the nostril, shaped according to the desired position, and thus fixed it is allowed to heal. An external wire gauze shape of the form the bridge is desired to assume can be used as an outside splint if wished, but is not necessary, as a collodion and muslin dressing suffices. If it is used, it has to be prepared of the correct shape before the operation.

Deformities of the Lateral Cartilages.—These cartilages, like that of the ear, are susceptible of easy alteration of shape in earliest infantile life, and also at any time of life during inflammation of their substance. They are generally distorted by a blow, but not in the direct and immediate way that the nasal bones are; on the contrary, they are inflamed by the blow, and being so will readily take any position and become fixed on the subsidence of the inflammation which had rendered them plastic.

The deformity is generally a lateral one, and unless the bones have been broken with them there is not usually flattening. The reason of this is readily intelligible when one considers that both the alæ and the septum have a structural arrangement that easily allows of their bending to either side, but opposes depression.

The usual cause of this deformity is a blow, as from a fist or a fall, a cricket ball, or collision with a player's knee at football. The nose is at the time much inflamed and swollen, and on resuming its healthy condition some few days later is found more or less perverted.

One treatment consists in fitting to the nose the mechanical appliance invented by my father, the construction of which is as follows :—An oval frontal plate is fixed on the centre of the forehead by bands round and over the skull. From this frontal plate two leaf-shaped plates pass along the sides of the nose, the stalks of which run from the centre of the frontal plate as far as the nasal alæ, where the widened leaf portion fits each side of the cartilages. These leaf-plates are so shaped that their approximation to one another holds the cartilages true and straight, and their necessary approximation is effected, according to circumstances, by either screw or spring force. The appliance thus arranged is worn several hours daily while the patient is in the house, and it may also be worn at night; in course of time it will certainly straighten the nose, as I have found by experience in a considerable number of

cases. The objections to this method are the length of time required and the tedious trouble of wearing such an instrument on the face. The best results are obtainable with young ladies at an age when their vanity acts as a strong inducement to curative self-sacrifice; boys and men, as a rule, prefer the deformity to the trouble of the remedy. At the same time the effect is certain if the treatment is persistently pursued.

But there seems to me to be another and much more expeditious method, which is based on an observation of my own experience. A boy playing at football was struck on the nose by the knee of one of his opponents. The nose swelled, and being treated only for a contusion, was found on the swelling going down to be very markedly distorted in its cartilaginous part. No treatment was adopted, but two winters later, the nose having during the intervening period remained unchanged, he met at football again with a precisely similar accident, and fearful lest any further distortion of the nose should take place, he rushed off and had it placed in a splint made of gutta percha. On the swelling going down, and on the nose resuming its natural condition, it was found that all deformity had disappeared, and that the nose was straight. In other words, while the cartilages were plastic under the effects of the first blow they were allowed to set crookedly, and while plastic under the effects of the second blow they were made to reset straightly.

Now some years since, when Mr Henry Morris

was engaged in the work of editing 'Bryant's Surgery,' he interested himself particularly in nasal deformities, and asked my experiences of the result of dealing with such cases by the nasal appliance above described. I then recounted to him my observation, and suggested that having in view the tediousness of the appliance treatment it would be worthy of trying the following method, viz. that the patient being chloroformed, a couple or more well-directed blows should be delivered by the fist (unscientific as it may seem) on the end of the nose, and that a gutta-percha splint should be adapted to the inflamed nose with a view of repeating artificially the process which had accidentally taken place in the case of the boy I have mentioned. The scientific way of doing this is to give the same amount of irritative rough usage with the forceps and then to adapt a splint or nose appliance.

Deformity of the septum may occur congenitally; may arise through faulty development during growth, especially about puberty; or may be the result of accidental and violent blows at any time of life. If the last is the cause, septal deviation may accompany that of the lateral cartilages just described, and can be treated concomitantly with them; but more often than not the external form of the nose is fairly true, while the septum alone is perverted.

On examining the cavity of the nose the deviation of the septal cartilage will be found to vary in

different cases, both in degree and in kind. It may so far encroach on the one nostril as to nearly or wholly occlude its cavity, and to produce various irritative symptoms. It may be that the cartilage is merely altered laterally, or that it has been dislocated from its bony attachments if a blow has been the origin of the error; or it may be, especially in congenital cases, bulged with a convexity into the one nostril, leaving a corresponding concavity towards the other; or, finally, in developmental cases it may be actually thickened towards one nostril, while its surface in the other nostril is regular.

Treatment consists first in wrenching the cartilage free of faulty attachments, and this especially applies to the dislocative cases; but by far the most important part of the operation consists in irritating the cartilage into that inflamed condition which I have stated renders it plastic, and capable of resetting in any dictated shape on the subsidence of the inflammation; and this is accomplished either by roughish usage with the forceps, or by making incisions with the knife into the substance of the cartilage, or by using freely the very fine drill I have mentioned in speaking of the nasal bones, it being, however, understood that the purpose of the drill is rather irritative than accessory to weakening the resistance of the cartilage at any particular spot.

The septum, then, having been freed and irritated, it has to be splinted in the right position till it has truly set; and this is done by direct support within the nostrils, and by counter-support on the

outer surface of the nose generally. The direct support is given by rightly shaped tubular vulcanite or ivory plugs placed in the nostrils, these allowing a free passage of air and secretions. The counter-support is given by a splint moulded to the nose and the adjoining parts of the face, and this may be made either by a starch or collodion dressing with muslin, or may be prepared beforehand in wire gauze, leather, or gutta percha. The correct shape of the outer splint can be attained by taking a gutta-percha mould of the nose before the operation, and by running therefrom a plaster cast on which the splint can be shaped. The advantage of this method is that if there is any lateral deviation of the entire nose it can be corrected on the plaster cast, and a truly shaped splint constructed. Wire gauze has this advantage as a material, that it is ventilating and cool, and, further, that it can be bent under moderate force, so that any directed pressure can be given to the nose as required during the healing period.

This method of treatment applies to all cases except those of over-development or thickening of the cartilage into the nostril. In such cases the proper course is to raise a flap of the covering tissues and slice off a portion of the cartilage, replacing the flap and keeping it in place by a soft plug till adherent.

It may be noted that the nose will bear very rough usage without ill results ensuing.

Where operation is objected to—and it frequently

is by nervous people—the mechanical method may be adopted as an alternative, which consists of a soft plug in the diminished nostril and counter-pressure outside the nose by the appliance previously described; but this plan is a very slow and tedious one.

Other deformities of the nose, such as congenital occlusion of the nostrils, warts, lipoma, and extraneous tumours, must be treated on general principles, according to their nature.

Deformities of the Lips.—The lips, which constitute the orifice of the mouth, being fleshy and integumentary, are affected only by the comparatively few deforming causes which pervert such tissues. In dealing with the face generally I have touched upon cicatricial contractions, and also upon those nervo-muscular ailments which produce either paralysis or spasm. To these may be added such incidental causes as hypertrophy, warts, tumours, and ulcerations, which may attack indifferently other parts of the body; and there is also one special deformity of the lips which I shall now describe.

Harelip.—This term is used to denote a congenital imperfection which shows itself as a fissure or apparent absence of continuous tissue between the two sides of the upper lip. It might at first sight seem that such a condition should be classed

as a deficiency rather than as a deformity ; but the essence of a deficiency is that its treatment requires the addition of something missing from the body, whereas it will be seen that the treatment of hare-lip is conducted rather by removal from, and not by addition to the existing parts.

The cause of harelip is an arrest of development during foetal growth, the three formative segments out of which the upper lip is built failing to duly unite ; and this disunion may be either single or double, and either partial or complete. Harelip, from the nature of its origin, is frequently associated with cleft palate.

The treatment consists in completing by a plastic operation the work left undone by nature, and in thereby neatly closing the fissuring. To do this, the most appropriate edge of the fissure is thinly stripped, as well also as a certain portion of the oral border of the contiguous lip. The opposite edge of the fissure is then stripped, but in such a way that while the knife travels close to the edge of the fissure above, it is carried in descending more deeply through the substance of the lip, so as to form an acutely triangular flap, which is shaped so as to be adaptable to the already bared oral edge of the opposite side of the lip. The edges of the fissure are then apposed and secured by sutures and one or more harelip pins, while the aforesaid flap is also sutured in place. Lastly, to avoid all tension on the sutures a dumb-bell shaped piece of plaster is adapted, so that its phalanges draw the

substance of each cheek towards the middle line, and cause the lips to semi-pout.

Such, in brief, is the principle of the operative method, and for double harelip a modification of the same proceeding is adopted. In actual practice, however, such is frequently the irregularity of the deformity that modifications of the details must often arise, which the ingenuity, judgment, and experience of the operator must scheme to meet.

Fissured Under Lip.—Although of much rarer occurrence than the previous deformity, fissures of the lower lip are not unknown; and they arise from the same developmental cause as those of the upper lip—that is to say, from a retardation or incompleteness of the processes by which the lip itself is formed in foetal life. Such fissures may be either pronounced, or may be indicated by a mere groove in the surface of an otherwise perfect under lip. Or, again, certain small bilateral pouches opening on to the surface of the under lip may be indicative of similar errors of foetal development. Further, the frænum of the tongue and the tongue itself may be involved in these perversions in various ways. All these conditions, if sufficiently marked to require surgical treatment, must be met by such plastic operations as are best suitable.

Deformities of the oral cavity may not in any way disfigure personal appearance, but they may

materially affect the very important functions of mastication, deglutition, and articulation, and for this reason will urgently require treating; and although the care of much of the oral cavity comes within the province of the dental surgeon, still there are affections in that situation that distinctly belong to the orthopædist.

Cleft palate arises from the same cause as originates the previously described deformity, namely, from arrested development during foetal life; and in this instance the results are a disunion between the two halves of the palate, or of that wall which separates the cavity of the mouth from the cavity of the nose. Now the mouth cavity is used for the passage of air to and from the lungs, for articulation both in the formation and the emission of voice, and for the passage of food to the stomach; and further, in its latter service, it is tolerant of foreign bodies, which can be voluntarily ejected if of no nutritive value. But the nose cavity, while of use in common with the mouth for the passage of air, has (excluding the organ of smell) no other purpose; and further, it is intolerant of foreign bodies, which, if they enter, are immediately and involuntarily ejected with considerable violence. The palate when in functional integrity keeps the nose and mouth separate, and precludes the foreign contents of the mouth from getting into the nose. Now in deglutition the propulsive force given to food compels it to go in the direction of the least resistance,

and that ordinarily is down the gullet; but if by any chance an opening exist through the palate between the mouth and the nose, some portion of the food enters the nose, and instantaneously produces a sneezing and choking ejection, which stops the act of swallowing altogether. Now with children, as cases in the coroners' courts sometimes show, this interference with swallowing power may, if proper precautions are neglected, lead to actual starvation; and even if with proper feeding this sad result is avoided and childhood's years are safely passed, there still remains when voice formation is being acquired an inability to properly and melodiously articulate words and sentences. Consequently cases of cleft palate have a grave importance.

Now the congenital disunion between the two halves of the palate may vary considerably in degree. It is possible to have a fairly considerable cleft in the back or soft part of the palate, and yet for the separation between mouth and nose to be perfectly maintained in swallowing. On the other hand, a very minute hole in the front or hard part of the palate may suffice to render easy and safe swallowing impossible. Further, while the cleft may only be partial, it often happens that it is so complete that the two halves of both hard and soft palate are divided by a fissure throughout their entire length.

The treatment of these cases is either precautionary, prothetic, or curative.

Precautionary treatment is adopted when the other

two are either impossible or inadvisable, as during the earliest periods of infancy. It consists in giving the child power to feed abundantly and safely, and this is secured by using a feeding-bottle with a nipple so formed as to flatly fill the cavity of the mouth, thereby constituting a kind of artificial palate which projects the milky food by its distant aperture far back into the throat. The same end is attained by properly managed spoon-feeding in small quantities. Sooner or later, however, in the patient's life the election has to be made as to which of the two next treatments shall be adopted.

Prothetic treatment consists in the adaptation to the uncontinuous and fissured natural palate of an artificial continuous palate which amends the defects of the former. There are several kinds of such artificial palates, the simplest of which consists of a gold plate apposed to the natural hard palate, to which plate is attached an india-rubber velum that underlies the natural soft palate and becomes representative of it in function. Such an appliance often answers admirably; but if from any reason it is unsuitable, there are several other ingenious kinds of artificial palates in either hard or soft rubber, and a selection of the most suitable form has to be made according to the peculiarities of the case, and more especially with reference to the power, shape, and amount of the separate halves of the natural soft palate, as it is this mobile portion that cuts off the cavity of the mouth from the posterior nares; and, further, the power of the fissured soft natural

palate can often be used as adjunctive to the artificial palate.

Sometimes, however, as I have previously stated, the cleft is only represented by a small hole in the hard palate opening into the floor of the nasal cavity, and in such instances anything so large as a complete artificial palate is not needed. I have a patient at present who has such an aperture, and it is effectually closed by a very simple appliance, which in shape is precisely like an ordinary shirt-stud, consisting of a little base plate, column, and knob. The base plate and column are of silver, the former being about the size of a sixpence, and the latter being tubular. The knob consists of a swollen piece of sea-tangle which, resting on the floor of the nasal cavity, holds the base plate firmly up against the palate, and absolutely closes the orifice. The way in which this stud-shaped appliance is inserted is as follows :—The piece of dry sea-tangle is fitted to the tube of the column and riveted firmly there, its upper end being filed into a diminutive knob just sufficient to pass through the aperture. The stud is then pushed into place, and temporarily retained there by a piece of gutta percha warmed and moulded to the palate. At the end of an hour the diminutive knob has swollen to several times its original size, and cannot possibly repass the cavity, and consequently holds the stud in position. Sea-tangle is particularly unaffected by the secretions of the body, and further the tissues of the body are not at all intolerant of its contact ; the little stud retains its

place roughly for about eighteen months. The patient has two of them about every third year, and can tell by the one he is wearing becoming loose when it requires removing, and he thereby avoids all danger of its dropping out while asleep and passing into the windpipe. Further, as the lower end of the tangle reaches and swells below the tubular column at its junction to the plate, the tangle rivets itself into the column most securely.

Operative treatment.—The essence of this method consists in paring the edges of the soft and vascular tissues that abut on the margins of the fissure, and in obtaining such freedom and sufficiency of material as may allow these pared edges to be brought and sutured continuously together with a view of healing, and thereby closing the fissure. With the soft palate, the paring having been effected from behind forward, any restrictions to the apposition of the edges is overcome by dividing the restraining parts by incisions parallel to the fissure. With the hard palate it may chance that its covering tissues are sufficiently ample at the edge of the fissure to be apposed without further work; but if such is not the case (and it generally is not so), then the covering tissues must be separated absolutely from the hard palate in two flaps, and thus freed, it must be drawn together as a continuation of the soft palate; in some instances these flaps may require further liberation by means of easing incisions through peripheral restrictions; and occasionally, if there is still insufficient material, some-

thing extra may be brought down in the shape of a flap from the covering tissue of the septum nasi, if, as ordinarily happens, the septum is adherent to one maxillary bone, while it leaves an exposed surface through its non-attachment to the maxillary bone of the other side.

The more intimate details of this operation I do not give, both because they are too lengthy for introduction into a work of this brevity, and also because the operation itself is not usually regarded as an exclusively orthopædic one, but, on the contrary, is fully described in most works on general operative surgery. For the same reason I also omit discussing the best age at which the operation can be performed, but merely add that expert authorities would seem to concur in holding that the third year of life is best for operation where the soft palate is alone affected, and the sixth year is the most appropriate for the operation where both palates have to be dealt with; such empiric rules, however, must be modified by the conditions of health and the precise state of the fissure. Early operation conduces to the attainment of more perfect articulation; late operation is aided by the fact that the sides of the fissure tend to approximate with growth, and to be covered with a greater substance of tissue.

It is to be noted that the preceding developmental deformities, namely, fissured lips and cleft palate, are very usually hereditary, and are also very frequently accompanied by nervo-muscular deformities of other parts of the body, and notably by club-

foot. This would seem to point to the fact that the true origin of such deformities is a perversion of the trophic nervous system taking place *in utero*, either in family predisposition from some germ or sperm heredity, or in isolated cases from some extraneous cause during gestation.

CHAPTER IV

DEFICIENCIES OF THE FACE

DEFICIENCIES of the face are extremely difficult to cope with, because it is not so much function as appearance that has to be restored; and because, the face being unclothed, any reproduction of appearance has not the advantage of such accessory concealment as can be obtained, for instance, for an artificial hand or leg by glove or by trouser and boot.

The skin and subcutaneous tissues of the face are liable to very extensive removal by burns or ulceration. Where the person affected is a man, and the part involved is within the range of that covered by moustache, whisker, or beard, a very good and effective veil can be obtained by false hair. But in all other cases the difficulties are very great. The old plan used to be to conceal any very ghastly cicatrix by a silver moulded plate, enamelled or painted to the similitude of skin; and that such metal plates are wearable is instanced by the history of the "man with the iron mask." But although I have tried them several times years ago, and have had the assistance of friends who were artists of note in endeavouring to obtain a likeness of skin substance, I cannot say that the results were

successful. For it is a fact not generally noted that the skin of the face is rarely for one hour together of one particular fixed colour or hue. Each change of temperature causes a difference in the actual colour of the skin, and so also do varying conditions and moods, as fatigue, irritability, and the like. The consequence of this is that, even if a perfect likeness of the skin surface could be reproduced, the line of junction of the artificial shield which covered a large cicatricial surface would be perceptible, because it would nearly always in colour be at variance with the existing colour of the adjoining true skin, and this would be the more noticeable because we nearly always view persons' faces closely. If a certain distance of view could be ensured, the matter would be different; and I have found this to be the case in the nearest approach I ever made towards getting a substitute in appearance for the true skin. A friend of mine, an actor, was going to play a dramatised version of 'Dr Jekyll and Mr Hyde.' It may be remembered that the doctor has suddenly to change his calm and benignant face into the distorted and hideous visage of his diabolic double, and this change, to be effective, has to be almost instantaneously performed on the stage in the full glare of the unlowered footlights. My friend appealed to me for some solution of the difficulty, and I solved it in this way. I took a mould of his face and ran therefrom a plaster cast. I then hunted out a manufacturer of certain goods in the very thinnest

of india rubber. On the cast of my friend's face a complete mask (excluding the apertures of the nostrils and the mouth) was manufactured of this translucent tissue. Certain additions of paint and hair were made, and when this india-rubber mask was drawn on, a completely new countenance was gained, the movement of each feature being nevertheless visible with its own marked character and mobility. When the change had to take place the benign doctor was seized with paroxysms, and fell groaning on the floor, and in his fit rolled behind a chair, still groaning, which chair concealed a trap through which the dresser handed the mask and held a looking-glass. A couple of instants sufficed for the donning of the facial covering, and still writhing and groaning Jekyll rolled into the public view from the other side of the chair transfigured into Hyde, his features working spasmodically under the clinging covering which so horribly changed his aspect.

The counterfeit in this case had the advantage of distance, which prevented anyone discovering the method of metamorphosis; it would not, however, have stood close and critical inspection any more than would dramatic paint and powder. I am inclined, therefore, to the belief that in every-day life little can be done towards the concealment of large scarred surfaces on the face.

The bones of the face rarely require artificially reproducing with the exception of certain portions

of the upper jaw which may have been removed by operation, as for malignant disease. I have seen the entire mass of one side of the upper jaw and the malar bone removed for disease, the skin surface of the face having been restored to perfect continuity, and kept in its proper expressive position by an artificial vulcanite substitute for the bones, introduced through the mouth and pushed into its fixed and proper place with perfect effect, and without inconvenience to the wearer. Curiously enough fashion and not surgery led in the reign of Queen Anne to a very common use of something similar. Her Majesty had podgy cheeks, and in consequence full faces became fashionable (just as high collars to coats did during the time of the Regent, when the latter initiated their wear to conceal his strumous scars). The ladies of Queen Anne's Court, in order to pay imitative flattery to their mistress, were wont to puff out their faces with pads worn between the teeth and the inner surface of the cheek, and carry these continuously during the day from a sense of duty and without a sense of discomfort. A somewhat similar but thinner pad is not without protective use in certain cases of facial spasm, where the cheek tends to get forced between the teeth on the motions of mastication and to be constantly bitten.

Deficiency of the Eye.—This loss in the present day is made good by the optician under the super-

vision of the ophthalmic rather than of the orthopædic surgeon ; still it is noted here for the sake of completeness. The successful adaptation of an artificial eye depends on two things : first, on the proper adjustment of the glass counterfeit to the stump that has been left by the operating surgeon or otherwise ; and next, on the attainment of a perfect likeness in colour, size, and clearness to the eye of the opposite side.

The nature of the stump depends on the conditions under which operation has been performed. In such instances as those in which an entire removal of the eyeball has been practised, there is no stump at all, and merely a cavity in which to lodge the counterfeit, and this latter is incapable of any movement at all with the eye of the opposite side, and so stares permanently in one fixed direction. Where it is possible, however, efforts are always made to preserve at all events that portion of the eyeball into which the muscles are inserted ; and where this has been successfully done, the artificial eye reposes on a mobile stump, and follows its fellow more or less harmoniously in direction. So important is the attainment of a good stump that an attempt has been made to attain this end (in cases where only the contents of the ball needed removal) by substituting for the contents of the ball a small, thin, hollow glass counterpart, over which the coats of the eyeball are drawn and stitched—that they may reunite and so retain a perfectly globular shape. This has frequently

been satisfactorily executed, and the result is a stump on which the glass scale forming the artificial eye front can accurately fit, and move in perfect unison with the other eye ; but even when this operation is successful the foreign globular body within the coats of the eyeball may at any time by its presence excite inflammation, and may need removal, or may slough out.

The manufacture of artificial eyes has of late years been much improved, both in ensuring artistic and accurate appearance, and also in the hardness of the glass of which they are formed. For it is to be noted that the lachrymal secretions in which the glass eye is constantly bathed exercise a corrosive action on the surface of the glass, and in time give it the opaque and rough appearance that one is familiar with in the pieces of glass one finds on the beach, and that have been rounded by the action of the waves and shingles. To resist this corrosive action of the lachrymal fluid more resistant glass has been introduced. Large quantities of the cheaper glass eyes are now manufactured in Germany and imported, our Teutonic cousins having in this as in other things undersold native productions.

I may add that there are some persons who never can or never will wear a glass eye, and who substitute for it the black patch that is not uncommonly seen in our streets. This patch is generally held in place by an elastic band surrounding the temples and occiput. It is not unusual for the elastic constriction to provoke either extreme dis-

comfort or even neuralgic pains by its persistent pressure on one particular spot of some sensory nerve. I have seen several such cases, and have met them by designing a light spring made of tempered piano wire, which is held in its place by being hooked spectaclewise over the ears, and having a wire carrier which holds the patch *in situ*. An accessory advantage of this arrangement is that the patch can be made to only lightly cover and not to press on the vacant orbit, and it is in consequence of this much cooler for wear.

Deficiency of the Ear.—Artificial ears used formerly to be made of either carved wood or of thin beaten silver coloured as nearly as possible to the tints of parts to which they were applied. More recently they have been made of red vulcanite, which has the advantage of being light, and also of allowing easy and cheap reproduction when once the original mould has been secured. Some time since, however, I found a better material still. There used to be sold in toy-shops and on Christmas crackers soft coloured masks of well-known public faces, such as statesmen and the like. These masks were made of a peculiar kind of soft india rubber, and if squeezed between the thumb and fingers exhibited the most ridiculous distortions of feature, but resumed their natural aspect on ceasing the pressure. It struck me on first seeing them that an artificial ear of the same soft and flesh-like material would be a most perfect reproduction of the natural

one, and having caused a proper mould to be made, in the next case I saw I tried this new material with absolute success.

The difficulty and labour, however, in constructing an artificial ear does not lie in the material, but in the production of the mould. A mould is first taken of the sound ear in gutta percha or plaster, and from this a plaster cast is run. From the form thus obtained a clever modeller makes a reverse counterpart in clay, and this modeller must be a fair artist to rightly accomplish it. The clay model is then baked, and a sectional plaster mould is made from the clay model. This sectional mould becomes the mother-mould for future use. From it is cast a wax model of the new ear, which in its turn is bedded in solid plaster. After drying the solid block of plaster which contains the wax ear, two holes are drilled down to the wax, and the whole thing is heated so that the wax melts and runs away, leaving a solid plaster block in which is a hollow mould of the desired ear. This gives the necessary form for working the india rubber in, but several further processes are gone through before the india-rubber ear is produced. Now it will be seen from this very brief description how tedious and laborious the whole process is, and, in consequence, how costly the production of one correct artificial ear must be. The little toy-shop masks I alluded to cost only as many pence as the ear cost pounds, but the thousands that are made in the one instance cover the cost of a lengthy process,

which has equally to be pursued for a solitary copy in the other instance.

The adaptation of the artificial ear to the head is a simple matter, and in its conjunction to the adjoining skin the margins can be well concealed by the hair of the scalp and whiskers.

It is needless to say that surgery has not yet reached the point of reproducing the ear by any plastic operation.

Deficiency of the nose may be due to traumatic causes, such as sword blows or felonious injuries with the knife, or the nose may be destroyed by burns, or, as is most commonly the case, its absence may be due to ulceration of its substance by some particular disease. There are also somewhat rare instances of its congenital absence. Whatever the cause may be, there is possibly no more repugnant deficiency than this, nor is there any deficiency that has more exercised the skill of the surgeon and the mechanic in efforts towards its satisfactory replacement. Of the two methods of restoration the prothetic has very frequently seemed to me to be more satisfactory than the operative, and I will therefore take it first.

Prothetic treatment.—The older mechanical plan of replacing a lost nose was to make a representative model of it on silver; the surface of this having been enamelled to the colour of the adjacent parts, it was suspended in position by the aid of a pair of spectacles. Recently a variety of materials have

been tried in turn, and after an experience of many cases I have found that the following method gives the best results.

A cast of the part and its surroundings is taken in gutta percha or plaster, and a converse cast is produced therefrom; to this converse cast is fitted a piece of carved lime wood, from which the new nose is shaped up in accordance with the general aspect of the patient's features, and, if possible, by the guidance of a pre-existing photograph. The wooden substitute so formed is immersed to saturate in a solution of shellac, and the soft wood so absorbs this resin as to become impervious to moisture or to the secretions of the part to which it is to be apposed. The surface that is free is then covered with thin parchment, and painted of the correct colour, and the paint is coated with an impervious dull varnish.

A nose so formed is extremely light, and this fact makes its attachment a matter of greater facility, this being effected by a combination of two processes: first, advantage is taken of any irregularities of the denuded nasal surface to get what grip on the parts that may be afforded; and next, the security of this grip is ensured by an adhesive material. Collodion used to be the customary adhesive, but Mr. Martindale, the eminent pharmacist of New Cavendish Street, originated and prepared for me a better medium, which consisted of vaseline, kealin, a glutinous adherent, and some colouring matter, worked into a stiff paste unaffected by damp,

and capable of being modelled like putty with the finger, so as to solidly conceal and fill the edged irregularities between the natural and artificial parts. Further, the whole nose can be lightly powdered, so that the varying changes in vascular colouring which takes place in the natural flesh shall not be perceptible in contrast with the artificial adjunct. As the adhesive material is non-irritant there is no chance of its setting up any original ulcerative action; further, the material itself can be medicated as an unguent in cases in which it is desirable.

In this way the whole nose or any part of it can be reproduced. It is not uncommon to find the septum of the nose eaten away and the outer shell left; in such instances the prothetic method gives very perfect results.

Operative treatment.—In orthopædic surgery two methods, the surgical and the mechanical, have been recently in constant competition, and this fact has a happy tendency towards the attainment of the greatest perfection in both. The formation of an artificial nose is an instance in point. Formerly operative attempts usually ended in the most ridiculous results, nowadays this is by no means always the case.

Operations of the plastic kind have two principal aims; first the restoration of natural material, and next the restoration of shape. Now the material of the natural nose is, roughly speaking, fleshy and bony. Constructive flaps of flesh have been obtained either from distant parts of the patient's own body

(or even by transplantation from parts of the body of another person), or from parts of the face adjacent to the lost nose itself. The latter is the plan now usually adopted, because it is possible to carve out these flaps in such a way as to leave them attached by nutrient pedicles until such a time as healing in their new position has taken place. The forehead, the cheeks, the lips, and even the mucous lining of the nasal cavities have been variously selected to contribute material for the new nasal formation. It is impossible to lay down exact rules in this respect; each case has to be viewed with a cogitative forecast as to the method most likely to produce proper results, and in different hands different methods have been recorded as best.

With respect to bony material, in cases where it is required, various attempts have been made to resupply it. Periosteal transplantations have been tried, and even the terminal phalanx of a finger has been used for the purpose successfully by Mr Hardie of Manchester.

Whatever the operative source of the materials may be, the main point is that their arrangement should be such as to reproduce some similitude of a sightly organ, and not (as was frequently seen) a mere gigantic pimple, more unsightly, if possible, in appearance than the original condition itself. With this view the new materials must be built up around proper plug-splints similar to those used in nasal deformities. It by no means follows that these splints should be used in the early stages of the

operation, when the vitality of the newly-placed material is of prime consideration ; but when once continuity of tissue is secured, then shaping of the new tissue as it heals and contracts is essential.

Altogether, successful rhinoplasty is fraught with many difficulties, which only great skill and experience can bring to a successful and comely result.

Deficiency of the Mouth.—Deficiencies of the lips, such as result on ulceration or on the operations performed for the removal of morbid labial growths, are repaired plastically by some operation of a similar kind to that done in fissure of the lips, and they need no further comment. Deficiencies of the teeth are of course in the province of the dental surgeon.

CHAPTER V

DEFORMITIES OF THE NECK

IN dealing with the deformities of the neck, as well as with those that affect the thorax and abdomen, it is usual, and indeed necessary, to except the deformities of those portions of the spine which course through these regions ; and I propose, therefore, in the main to follow the customary rule, because it is not only convenient, but is based on common sense ; for the spine is of such importance orthopædically, and subject to such special deformities of its own, that it may be taken as a region entirely separate from and additional to those parts into which the body is anatomically divided by convention. For this reason, therefore, I shall leave cervical caries and cervical curvature—although regionally affections of the neck—to be considered with the allied disease of the spine itself. On the other hand, I shall deal with wryneck and with fractured neck under this heading of the neck, because they are special to this region, although in reality they are also practically affections of the cervical spine, of which the head may be considered merely as the top segment. And it will be found on consideration that some sort of arbitrary consideration of this kind is absolutely

necessary in any attempt to adapt a regional method to a particular branch of surgery, because, as there are many ailments that are common to several regions, so there are also those which lie on the border line between them, and must be selectively classed in one region or the other for the purposes of description.

Cicatrices of the skin frequently disfigure the neck, and the most familiar cause of these is strumous suppuration of the cervical glands; but ulcerations, burns, and traumatic injuries are also not uncommon as the origin of unsightly scars. The resulting deformity will, of course, vary with the area of tissue involved, which, if large, may not only be locally unsightly, but may also produce remoter disfigurement, as in the instance of cicatricial wryneck.

The ordinary strumous scar may form an extremely unpleasant blotch on an otherwise good and well-shaped neck, not only because the cicatricial tissue constitutes by its unnatural gloss and colour a marring break in the surface of the natural skin, but also because the cicatricial tissue itself generally forms adhesions to the underlying tissues, and in contracting forms a deforming and irregular pit, which spoils the even moulding of the neck. The most ingenious method of removing such depressed pittings has been originated and described by Mr William Adams, his plan being to pass a very fine tenotomy knife underneath the substance of the

scar, and to dissect the cicatricial material from its underlying adhesions. When this has been completely done a couple of needles are passed criss-cross beneath the freed cicatrix, so as to raise it above the surface of the surrounding skin, and, as it were, turn the tissue previously lining the pit inside out. Into the space thus made, between the elevated cicatrix and the tissues beneath, the sanguineous fluid flows, and has time, before the removal of the needles three days later, to become organised, with such result that as healing takes place the pit has become evenly filled up, and the surfaces of natural skin and cicatrix are on a true level.

But all cicatrices are not pitted, and yet may, notwithstanding, be held unsightly. If vanity is sufficiently potent with the patient to induce in her a desire for the removal of the scar, there is no reason why it should not be entirely taken off, and the spot induced to heal with a sound skin surface by the assistance of skin-grafts. Such a course, however, would seem to be an extreme concession to personal persuasion.

Cicatricial Wryneck.—I have said that cicatrices of the skin may produce deformity by their remoter effects, and this is particularly the case in extensive burns of the side of the neck, especially if the area chances to reach from the ramus of the lower jaw as far as the clavicle. In such an instance adhesions to the two bones is most likely to be formed, and, on the cicatrix generally contracting, the head

is pulled over to the side as inevitably as it is by a spasmodic sterno-mastoid muscle.

Treatment in such cases consists in regular daily extension of the cicatricial material while it is still recent, and this can be effected either by a mechanical appliance or by manipulation. If these methods do not suffice, then the opposing and unyielding cicatricial bands are to be divided by the knife.

True Wryneck.—True torticollis is distinctly a **nervo-muscular** affection, and the previously described cicatricial kind, as well as that due to lateral deviation of the cervical spine in caries, may be viewed as false wrynecks, although true wrynecks may occur in cervical caries through irritation of, or pressure on, the spinal accessory and other nerves. And although the term wryneck is used popularly to denote any peculiar onesidedness of the head on the spine, no matter from what cause, still in practice a diagnosis between the true and the false kinds is essential for satisfactory treatment.

True wryneck depends on a disturbed balance between the muscles of the two sides of the neck, whose normal duty it is to maintain the head evenly on the summit of the spine. The muscles of the one side may either be above the normal power as in spasmodic wryneck, or below the normal power as in paralytic wryneck; but on whichever side the overstrength exists, on that side the back of the head will be drawn down towards the shoulder,

while the chin is thrown up on the opposite and weaker side. The muscles principally involved are the sterno-mastoid, whose action therefore is the dominant one in the direction of the deformity ; but other muscles of the neck may also be affected, though not with such apparent result.

The causes of true wryneck are : spasmodic contraction of the muscles, paralysis of the muscles, and injury or disease of the muscles themselves. As the cases dependent on these separate causes require different treatment, they must be taken as constituting separate classes. The general lines of treatment are those which must be followed in all nervo-muscular deformities, which may be summed up thus :—That the cause should be correctly diagnosed and, if possible, removed ; that if the cause can be only slowly dealt with, mechanical assistance should be given to keep the parts in position, and so prevent the contraction of the involved as well as of the outlying tissues ; and that if the cause cannot be removed, then ease from the deformity should be obtained by certain operations on the nervo-muscular elements and by mechanical assistance conjoined.

Spasmodic wryneck may be caused by either central, peripheral, or reflex irritation of the nervo-muscular elements ; and while the spasm may be either tonic or clonic, it is generally the latter. It is very important to clearly distinguish between the causes, because while cure may be readily attained

in some cases, in others it often proves impossible, and only comforting amelioration can be hoped for.

Central spasmodic wryneck may depend on disease of or pressure on the nervous centres themselves. If this is due to something tractable, as syphilitic mischief, the irritating cause may be removed under treatment. I have had a case in the instance of a girl, who had suffered first from tubercle of the lungs, and later on from lower dorsal caries, and in whom torticollis supervened from a tubercular tumour of the brain (the case having been diagnosed as such by one of our highest cerebral authorities, to whom I took the patient for consultation). In this somewhat curious case the symptoms disappeared under the constant use of cod-liver oil and iodide of iron, owing presumably to the tumour having become diminished, encysted, and inactive. As a rule, however, this central spasmodic torticollis comes on from some intractable disease or deterioration in middle age, and these cases are unfortunately somewhat hopeless, as far as the removal of the cause goes. Apart from this, however, there are several means of affording relief from the trying and persistent discomfort of the spasm. The muscles themselves may be divided so as to become inert, or the nerves which convey the irritative stimulus (notably the spinal accessory) may be rendered uncontinuous by the excision of some portion in their course. When, however, either of these

operations have been performed, the muscular balance is by no means restored to evenness, and some mechanical appliance which either props or suspends the cranium is as a rule needed.

In certain instances an appliance alone will suffice, for I have observed that it often happens that a patient will put a finger of one hand on to one particular point of the skull, and will be able by pressure on this spot to steady the head truly. When I first noted this, I thought it might be due to the raising of the arm, which lifted up the clavicle of its side, and thus rendered the cleidal portion of the sternomastoid slack; but this was not so, as a mechanical reproduction of the same pressure as that previously exerted digitally produced the same satisfactory result. It may be said, however, that the mechanical appliance cannot be of any empiric form, but must be suited to each particular case.

Central spasmodic wryneck may be congenital, and is often in such instances persistent, defying medical treatment. When such is the case it exercises a curiously perverse influence on the growth of the face, and especially on the orbits. Dr Russell Reynolds sent me a little girl of about eight years old some years since, who had suffered from torticollis from her birth, the spasm proving to be irremoveable by any method, although it was slight, and the head was readily held in its correct position by light mechanical means afforded by a jury mast and suspensory crossbar. When the

mechanism was applied, and the centre line of the face was brought truly vertical, the two eyes and orbits were no longer in a correct horizontal line, but had shifted by trophic accomodation which had been directed toward bringing the eyes into a horizontal line in the perverted position of the face. Consequently when the face was held truly the eyes were no longer horizontally in line. The child is now about twelve, and it is worthy of remark that owing to the head having been correctly held during the day, the erroneous angle of variation has been reduced. I took this case as an appropriate one to make this observation on, and carefully measured the angle of error from time to time; and I have noted this change in other cases.

I do not speculate on whether the brain surgery of the future may be capable of coping with this central type of wryneck, but at present it would seem impossible, owing to the deep and involved position of the centres themselves.

Neuro-mimetic wryneck may be also conveniently classed among the central cases, although in them the perverted volitional centres react on the motor centres, and the latter are not the absolute origin of the spasm. Treatment in these instances is rather psychical and influential. **Hysteric** wryneck likewise may come in this central category. It is rare and is often very difficult to diagnose; its treatment must be conducted on the recognised lines adopted in the primary disease.

Peripheral spasmodic wryneck ensues from some injury to or irritation of the distal efferent portions of the nervo-muscular elements, and these nervous ways may be affected either externally by pressure, as for example of tumours, or internally by inflammation, as for example through rheumatism, syphilis, and the like. The treatment, after arriving at a correct decision as to the nature of the irritation, will be similar to that adopted in cases of central origin, namely, the cause if possible should be removed; if this removal is lengthy and other tissues tend to be involved in the contractions, then a mechanical appliance should be used to counteract these contractions; and, lastly, if the cause be irremovable, then alleviation can be operatively attempted by either tenotomy or neurectomy, an appliance being also used as an accessory.

Reflex wryneck is caused by some irritation to the afferent nerves which is conveyed to the centre, and which then causes an extravagant issue of stimulation through the efferent to the muscles, which latter in consequence contract and thereby produce the deformity. In most works the familiarly adduced instance of reflex wryneck is the case in which the cervical glands are inflamed, and are presumed by pressure on the afferent nerves to provide the reflex exhibition; but although this may sometimes be the case, I am convinced that in the majority of instances the deformity is accommodative, that is to say, that it eases the pain to hold

the head voluntarily on one side, and that this position is assumed as one of comfort, and not as a compulsory and involuntary action. A much better illustration of reflex wryneck is a case that I quite recently saw. The patient was a girl who had just reached the age of puberty, and who had quite suddenly become afflicted with the deformity. Following the rule I always pursue of not confining my examination to the absolute locality of the affected parts, I found that the right mamma (as is not unusual) had commenced development before its fellow, and that in the exuberance of its glandular changes it was much inflamed. Taking this to be the cause of the whole mischief (possibly through irritation of the supraclavicular nerves of the cervical plexus), I merely applied cooling lotions to the inflamed breast, with the result that within a fortnight the torticollis had entirely disappeared concurrently with the inflammation subsiding. It seems to me that, both by objective evidences and by the results, no clearer instance of reflex wryneck could be adduced.

Paralytic wryneck, like spasmodic wryneck, may be of either central or peripheral origin, that is to say, the centres themselves may, through disease, or pressure, or other disturbance, be rendered incapable of issuing stimulations through their efferent nerves; or the nerve-ways themselves being blocked by some kind of injury which destroys their functional continuity, may be incapable of transmitting

natural stimulations to their respective muscles, although the centres continue their capability of issue.

In either event the first attempt in treatment should be directed towards the removal of the cause, if possible; but failing this, mechanical treatment gives the best results, seeing that it is very easy to hold the head in a true and comfortable position by an extremely light and concealed appliance. Operative treatment is valueless, and the reason of this is readily understood, for if any muscle is to be rendered inert, either by tenotomy or neurectomy, it will be the unaffected healthy muscle of the opposite side; and if this result is attained, one gets two practically inert and paralysed muscles to deal with instead of one, and mechanical assistance more than ever would be requisite.

Theoretically, if operation were to be of value, it would consist neither in neurectomy nor in tenotomy, but in a partial division of the fibres of the healthy muscle of the one side. For the affected muscle of the other side is not always completely paralysed, but generally only partially so, to such an extent, however, that the healthy muscle of the opposite side over-pulls it and causes the deformity. But if the healthy muscle could be robbed of its surplus force by a partial division of its fibres, a balance might be secured, only, however, to disappear as the fibres of the healthy muscle rejoined and regained their ascendancy; a theoretical perfect operation would be the absolute excision of just the

amount of healthy muscle to leave the remnant a precise counterbalance of the partially paralysed one; but such accuracy of operation is not attainable. Further, as the paralysed muscle might under treatment resume its power, there would then be no proper counterbalance on the opposite side.

Electricity is another method of treatment which is often used to the paralysed muscles. I do not propose now to enter into a discussion on electrical treatment generally, as I shall do so in another part of this work which will deal with deformities of the lower limbs; but this much may be said, that where the lesion in the centre or in the efferent nerves is not due to actual destruction of nervous tissue, and where there is possibility of functional recuperation, electricity has great value as an adjunctive method; where, on the other hand, the nervous tissue is definitely disintegrated and incapable of recovery, electricity is useless. As, however, the difficulty of distinguishing between the two conditions is very great, electricity is always worthy of trial as an adjunctive aid.

Purely Muscular Wryneck.—The actual muscles of the neck, entirely apart from their nervous connections, may be affected either by morbid growths in their substance, the treatment of which is operative, or they may be affected by traumatic rupture of their fibres, the consequent healing of which causes contractive shortening of their length. An instance of the latter is that congenital form of wryneck which

is due to rupture of the muscle during parturition, where the presentation has been of such a kind that in the expulsive uterine efforts the head and shoulder of the child have been pulled violently from each other in such a way as to tear through the fibres of the overstrained muscle. After birth cicatricial material is formed in the healing of the wound, being felt as a distinct swelling, and the contraction of such material causes shortening of the muscle, often to such an extent that the ear is absolutely drawn into contact with the shoulder. Treatment in these cases should at first be manipulative only, the nurse being directed to gently but fully draw the head towards the opposite side with a view to stretching the newly deposited cicatricial tissue; and it is obvious that the earlier this treatment is commenced the better. Failing a successful result by this method the operative treatment should be adopted; and in turn, if this proves unsatisfactory, the mechanical method can be used as an ultimate resource.

Accommodative Wryneck.—There are certain painful conditions of one side of the neck as, for example, from swollen glands, abscesses, tender tumours, and the like, which are to a certain extent alleviated in their poignancy if the head is so held towards the painful side that the tissues of the neck are relaxed. Such cases, before they are examined, have all the appearance of true wryneck, but of course they differ in the fact that there is absolutely

nothing wrong with the neuro-muscular system. Such cases are sometimes cited as reflex, and notably those in which the glands are swollen, and are presumed to be indicating irritation in the afferent nerves. But they are not reflex, being simply due to a voluntarily assumed position which is found to be one of least tension and pain ; I would therefore call these cases accommodative. They are extremely common in practice and curable simply by removal of the painful cause.

Operation for Wryneck.—I have alluded to tenotomy and neurectomy as alleviant treatments in dealing with wryneck, and I will now briefly sketch their performance.

Tenotomy or myotomy (for the terms are in these cases somewhat indiscriminately used) is conducted as follows :—A puncture or incision is made about half an inch above the clavicle and a little to the inner side of the edge of the tensed tendon. A director is then closely worked round and behind the tendon to separate off such structures as lie in dangerous contiguity to it. A blunt-pointed tenotome completes the rest. A similar method is adopted with the clavicular insertion. The only and obvious precaution is that of thoroughly separating the muscle from the vessels beneath before undertaking division. When the operation has been performed, the head may be either rested by packing on a pillow, or supported by a gutta-percha collaret. Subsequently when newly forming tissue has been

laid down between the divided ends, manipulative (or mechanical) extension must be adopted in the same way as in cases due to the congenital rupture of the muscle before referred to.

Neurectomy consists in resecting about half an inch of the spinal accessory nerve. An incision along the front edge of the muscle, carried from the mastoid process for about a couple of inches downwards, gives access to the nerve in its course towards entering the muscle itself. A careful separation of hazardous tissues (notably the external jugular vein) is pursued to isolate it, and such a portion of the nerve is removed as cannot be restored by renewed and recuperating tissue. There is no fault in removing too much, the error may be in removing too little. It may be mentioned that, if at any future time it is found desirable to restore the function of the nerve, a fresh segment can be introduced in lieu of the removed portion by grafting in a piece of another nerve from a newly amputated limb of another person, that it may take the place of the lost and resected portion. Mr Augustus Pepper thus satisfactorily replaced a destroyed portion of the musculo-spiral nerve of one person by a warm and living piece taken from the small sciatic of another person whose limb had had to be removed; to such an interchange of personal structure has modern surgery advanced.

Mechanical Appliances for Wryneck.—The appliances used to control wryneck have a variety of

form and design, which depends on the amount and rigidity of the deformity; and it is to be observed that between the slight deficiency in muscular power of mild paralytic wryneck, and the violent exaggeration in muscular power of marked spasmodic wryneck, there may be every grade of case.

All the appliances, however, must have the following points in common: first, they must secure a sufficient hold on the body to act as a base, from which support may be built up; next, they must afford an ample and comfortable hold to the head; and, lastly, they must possess such a proper structural connection between the body-hold and head-hold as shall be sufficient in power and direction to cope with the deforming tendencies.

The base-hold on the body is obtained either from the shoulders or from the swell of the hips, while the holds on the head may be either in the form of buttresses below, plates pressing laterally, or slings for suspension.

The simplest of such appliances is a collaret, made either of gutta percha or leather in one continuous piece. Its lower part is yoke-shaped over the shoulders and the very top of the back and chest; it rises to loosely envelop the neck and to form above a shelf all round the skull, on which rest the lower lower jaw, the mastoid processes, and occiput; the yoke portion is held firmly to the shoulders by straps beneath the armpits. Such an appliance forms an admirable support in cases of paralytic wryneck.

A stronger appliance, of the same general type, consists of a steel yoke held in position by axillary straps. From this yoke rods pass upwards along the side of the neck to terminate in such holds as may be needed to sustain the head. In some cases these holds, which may be varied in size and in position, buttress and support the skull against falling into a faulty position. In cases of mild spasmodic wryneck, and also in those cases (above mentioned) in which pressure at one particular spot gives the power of voluntarily steadying the head, this form of appliance is serviceable. Sometimes the supporting rods are continued to the level of the top of the skull, and employed to hold the head suspended by means of chin and occipital slings.

Where the shoulders, however, do not afford sufficient fixity of hold, recourse is had to the trunk generally, and to the swell of the hips in particular, the appliance being somewhat of the comprehensive form used in spinal curvature, and consisting of either a leather, poroplastic, or steel jacket. From the top of such jacket the supporting mechanism is continued, and it may be of various forms according to the case. It is unnecessary to describe them here in detail, but they may be found figured in the book mentioned in the foot-note.*

Drop-head.—It sometimes happens, especially in very old people, that the muscles of the neck be-

* 'A Manual of Orthopraxy,' by H. Heather Bigg. Third edition, 1877. Messrs. J. & A. Churchill.

come insufficient in power to keep the head elevated, and it consequently falls forward till the chin rests on the chest, and it may be that respiration is seriously, if not dangerously, impeded by this helpless condition when the sufferer is in the upright position. Its treatment will be conducted by an appliance on the same principle as those just described for wryneck. As a rule, in such cases of senile debility, any pressure on the chest is undesirable, hence the yolk held on the shoulders and chest is contra-indicated; and the hold on the body with suspensory gear to the head is most comfortable. There is also a special form of appliance for such cases familiarly known as a "chin-rest;" it consists of a belt, fastened round the waist, having a long metal plate in front, which plate is further secured in its position by shoulder-straps. From this plate arises a metal rod which terminates above in a cup-shaped rest, in which the chin reposes and is supported.

It is not unusual to find delicate, atonic, and long-necked girls suffering from a form of drop-head, the muscles being incompetent to prevent the head from dropping and the chin from "poking." Such cases are best dealt with by cervical gymnastics in combination with some sort of reminder to position. The gymnastics should be of the simplest kinds, consisting of slow and successive flexions and extensions of the head and neck for fifteen minutes twice or thrice daily; it is also an excellent adjunctive exercise to make the patient walk about for a

similar period with a wooden ring balanced on the front part of the top of the head, in such a way that if the head is inclined forward it slips off. With respect to reminders to position, I was accustomed formerly to use the chin-rest previously described, but I have within the last few years employed a much more homely and simple contrivance. It consists of a "masher" collar made of black holland and attached to a habit-skirt, and very stiffly starched. The peaks of the collar are carried into a pronounced point, and the collar at first is made low, but increased in height at intervals. This arrangement can be worn over the ordinary dress in the schoolroom or elsewhere in the house; when the head stoops forward the peaks of the collar unpleasantly, though bluntly, pricking the chin, render the bad position uncomfortable. Thus gradually the muscles of the neck are provoked into doing their work, the collar practically acting as a gymnastic master. A very similar method used to be adopted in French schools about fifty years since, before steel pens came in; a small appliance being then worn round the neck, and it carried an inverted quill pen whose point could be set at any required level; the unpleasant sensation caused by contact of the chin against the pen point became the tutor to correct position, and gymnastic master to the muscles.

Fractured Neck.—It might seem at first sight that this terrible accident did not come within the

range of orthopædy, but when it is considered that its treatment is essentially one of perfect rest and fixity of position, and that the certain attainment of such conditions is beyond the reach of the ordinary appliances for fracture, the record of a simple method of successfully dealing with them will not be here out of place.

It is popularly imagined that a broken neck means instantaneous death, and this is true in a large majority of cases, as where the phrenic nerve is involved and respiration becomes instantly impossible; but many instances have been collected in which the patient has lived for weeks, and also others in which complete recovery has taken place. In these latter cases it might be argued that as death did not result the symptoms were misleading and the neck was not really broken. But I remember hearing of a case which occurred a few years since which definitely proved that fractured neck was not necessarily fatal, and that it might end in recovery with care, or that it might prove fatal by a neglect of proper precaution. The patient was brought carefully into hospital with all the symptoms of broken neck, laid in a true position on the bed, while the head and neck were carefully packed to ensure immobility. Thus treated, the minor symptoms gradually cleared up, and at the end of a few weeks there was apparently nothing the matter with him, beyond the known fact that if new tissue had been formed it would still be too weak to bear strain. Continued rest in the same position was consequently

enjoined, and all attempts at sitting up were interdicted. But the patient having probably made efforts at lifting the head slightly, and having found that no pain ensued therefrom, took advantage of the nurse's leaving the ward to actually sit up in bed. A few seconds later the nurse re-entered unnoticed, as the patient's head was turned in the other direction. The moment she observed this disobedience to orders she called sharply to the patient to lie down again, but he turned his head swiftly round with a start to reply, presumably, that his neck was all right and that he would sit up. He never, however, uttered his sentence, but fell back dead. The post-mortem revealed the facts that the cervical spine had been fractured, that reparative tissue had been laid down, and that this latter had been torn through by the last sudden movement of the head.

There are then cases of fractured neck which are capable of recovery, and it is obvious that their chances are the greater in proportion as the head, neck, and shoulders can be passively and immovably fixed on restful relationship to each other. Now the accident frequently happens in the hunting field, and if (as is often the case) there is a doctor out with the hounds who sees the accident and recognises its nature, he will take care that the sufferer is most delicately placed on a door or gate and conveyed to the nearest place of shelter, and will see that the head, shoulders, and neck are carefully packed to avoid all chance of movement. And although in the paralysed condition of the

patient's body there is not much chance of voluntary movement on his part, still it is obvious that anything that affords more secure fixity than mere packing will also ensure greater safety, and this is especially the case when later on the paralysis commences to clear up; for although the patient may voluntarily lie still enough while awake, yet dangerous involuntary movements may still be made while in restless sleep.

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